

series of five spots, all small: secondaries below very different from *P. maculatus*, sordid white; a rather broad olive-brown band, shorter than the darker band of *P. maculatus*, and crossed by white veins, indistinctly bordered with white internally, and broadly white-bordered externally; the internomedian, first median, and discoidal interspaces irrorated with the same brown (beyond the white border); external area broadly brown, its inner half blackish; no trace of the angulated submarginal white streak common to *P. maculatus*; fringe white, spotted with brown. Expanse of wings 1 inch 3 lines.

I have seen several examples of this species.

### VIII.—On *Polyzoa* from Iceland and Labrador.

By the Rev. THOMAS HINCKS, B.A., F.R.S.

[Plates X. & XI.]

THE species noticed in the present paper were obtained by Dr. Wallich off the coasts of Iceland and Labrador. For the opportunity of examining them I am indebted to Mr. Busk. Some new forms occur amongst them; and they have besides their special interest as illustrating local variation and geographical distribution.

The material which I have dealt with in this paper has been for a very long time in my hands, but after partial examination was laid aside under the pressure of other engagements.

#### ICELANDIC SPECIES.

##### Order INFUNDIBULATA.

##### Suborder Cheilostomata.

##### Genus HIPPOTHOA, Lamx.

##### 1. *Hippothoa expansa*, Norman.

A single specimen of this form occurs on shell. Off Reikiavik, in 100 fathoms, amongst icebergs. All the Icelandic species were taken in this locality.

[Arctic seas, not uncommon (*Norman*, 'Valorous' dredgings); Shetland (*id.*.)]

## Genus SCRUPOCELLARIA, Van Beneden.

2. *Scrupocellaria scabra*, Van Ben.

Not uncommon.

It has a place in the Greenland fauna of Fabricius, and was obtained by the German Polar Expedition at Sabine Island.

[Godhavn Harbour, Disco, 5–20 fathoms (*Norman*, 'Valorous' dredgings); Spitzbergen, 6 fathoms, and more frequently 80 and 150 fathoms (Swedish Expedition, teste *Smitt*).]

## Genus CABEREA, Lamx.

3. *Caberea Ellisii*, Fleming.

A single specimen.

[Hebrides; Shetland (*Norman*); North Sea, from North Britain to Finmark, in deep water (50–80 fathoms), not uncommon (*Smitt*); Labrador and Maine (*Packard*); Scotch Glacial deposits (*Geikie*).]

## Genus MENIPEA, Lamx.

4. *Menipea ternata*, Ellis and Solander.

Not uncommon.

[Arctic Seas (*Smitt*); Britain; Labrador.]

5. *Menipea arctica*, Busk.

Only a fragment occurred in the small gathering which came under my observation; but the species seems to be a common arctic form.

[West Greenland (*Sutherland*); Arctic Seas, in deep water, to 200 fathoms (*Smitt*); Nordshannon (German Polar Expedition); entrance of Baffin's Bay, 175 fathoms ('Valorous' dredgings).]

## Genus BUGULA, Oken.

6. *Bugula Murrayana*, Johnston.

The form which occurs in the Reikiavik dredging is the var. *fruticosa* of Packard, which seems to predominate in the Arctic seas.

[Spitzbergen; Finmark, 100 fathoms (*Smitt*); Labrador (*Packard*); Holsteinborg Harbour, both typical form and var.; entrance of Baffin's Bay, var. *fruticosa* (*Norman*, 'Valorous' dredgings).]

## Genus MEMBRANIPORA, De Blainville.

7. *Membranipora lineata*, Linn.

A single specimen, with ovicells, characteristic, on *Scrupocellaria scabra*.

[South Labrador (*Packard*); coasts of Scandinavia, in shallower water, common (*Smitt*); Finmark (*Lovén*); Spitzbergen, a single specimen (teste *Smitt*); Britain.]

8. *Membranipora craticula*, Alder.

On shell.

[Spitzbergen, not rare (*Smitt*); Britain; Scotch Glacial deposits (*Geikie*).]

9. *Membranipora Sophieæ*, Busk.

On shell. An arctic form first discovered by Dr. Sutherland in Assistance Bay; Spitzbergen, common in 30-50 fathoms (*Smitt*).

10. *Membranipora cymbæformis*, n. sp.

*Membranipora spinifera*, Smitt, Krit. Förteckn. öfver Skandinaviens Hafs-Bryozoer, pt. iii. pl. xx. fig. 32.

*Zooëcia* oval, short, massive, of considerable depth, irregularly disposed; the margin with about eight to ten tall and erect spines, two of which are placed at the top of the cell; *avicularia* pedicellate, borne on a very long stem, very slender, springing from the side of the cell, near the oral extremity; mandible acute, pointing upwards. *Ooëcium* unknown.

This form has been figured by Smitt under the name of *M. spinifera*; but it is very distinct from Johnston's species, which it seems to replace in the Arctic seas.

The chief points in which it differs from our British form are the much smaller size, the somewhat boat-like shape, and the more massive character of the cells, and their irregular arrangement, and the small number of its spines, which are much taller and stouter and more erect than those of *M. spinifera*.

In the latter the cells are elongate-oval, disposed in lines with much regularity, and armed with sixteen or eighteen spines, which, for the most part, bend inward over the membranous area; they are shallow and not calcified *below*, the flooring of the cell being simply membranous. But the cell of *M. cymbæformis* is deep, inclosed by comparatively high walls, which are well seen in the marginal zooëcia, and is furnished

with a calcareous lamina beneath. There are usually no more than two or three spines on each side, which are very tall and stout, cylindrical and suberect. There are also differences in the avicularium, though in both cases it is of the pedicellate type. That of *M. cymbæformis* is borne on a very long pedicel, to the top of which the avicularian cell seems to be articulated; and it is altogether more slender than that of its ally.

Several specimens occur forming small patches on weed. Smitt states that it is not uncommon in the Arctic seas, as far as the north of Spitzbergen, in 10–60 fathoms. The *M. lineata* of the German Polar Expedition, obtained at Sabine Island, should probably be referred to this species.

### Genus LEPRALIA, Johnston.

I retain for the present the genus *Lepralia* as Johnston defined it, though well aware that the somewhat heterogeneous assemblage of forms which it includes must be broken up and redistributed.

#### 11. *Lepralia trispinosa*, Johnston, var. (Pl. XI. fig. 1.)

*Escharella Jacotini*, forma *lamellosa*, Smitt, Krit. Förteckn. öfver Skandinavians Hafs-Bryozoer, pt. iv. (1867) pl. xxiv. fig. 56.

On shell, common.

[Davis Strait, 100 fathoms (*Norman*, 'Valorous' dredgings).]

In the variety of this well-known species, which alone occurs amongst the Icelandic dredgings, the surface of the polyzoary is very flat and uniform in appearance and of a dull whitish colour. The zooecia are smooth or very minutely granular, areolated round the margin, and bordered by prominent lines; the aperture is suborbicular, well arched above, the lower lip rising in the centre into a small denticle; the margin is not at all elevated. The large pointed avicularia are present as in the more usual form; and there is also frequently a small oval avicularium with rounded mandible on one side of the mouth. Similar avicularia sometimes occur on other parts of the cell, as represented in the figure (Pl. XI. fig. 1). The oocidium is of the usual form, with the characteristic group of perforations on the front.

In the preliminary report on the "Biology of the 'Valorous' Cruise," printed in the Proceedings of the Royal Society for June 15, 1876, p. 208, Mr. Norman records this form as amongst the Greenland dredgings, and regards it as a new species, which he proposes to name *L. Jeffreysii*.

The chief characters which he seems to rely upon as

distinctive are the ovoid avicularia and the absence of the spout-like sinus on the lower margin of the aperture. But the oval avicularia are commonly present on the normal *L. trispinosa*, though, curiously enough, they have hitherto escaped observation, and are not figured or referred to by any writer on the Polyzoa. They are, of course, frequently wanting, as are also the large pointed avicularia; but in some part or other of the colony they may generally be detected. In some cases they are present in great numbers, two or three on a cell, and are very irregularly placed. I have specimens, probably from deep water, which in some respects resemble the Icelandic variety, in which there is an extraordinary development of them. As to the form of the mouth, it is very variable in *L. trispinosa*. The spout-like projection is much more markedly developed in some cases than in others; at times it is scarcely perceptible. Near the edge of the colony cells may commonly be met with which bear the closest resemblance to those of the arctic variety, especially in the character of the mouth, being altogether destitute of the elevated peristome.

There is therefore no valid ground, in my judgment, for erecting the present form into a species. It exhibits a very slight divergence from the normal *L. trispinosa*, the absence of the raised peristome marking, as stated above, an early stage of growth in this species. The presence of the oval avicularia is really one more proof of their identity.

Smitt has given a good representation of the different states which this species assumes, though he seems not to have noticed the small avicularia.

## 12. *Lepralia tubulosa*, Norman. (Pl. XI. fig. 8.)

Two or three specimens of this interesting species occur on fragments of shell. In their perfect condition the cells are armed with three or four spines. They are less thickly perforated than in the only British example which I have had the opportunity of examining. On one of the specimens the oocœcia, which have not hitherto been described, are present; they are arcuate in form, shallow, depressed, and set very far back behind the tubular neck of the cell. The surface is smooth and silvery, with a few perforations.

This remarkable species will stand as the type of a new genus, for which I propose the name of *Cylindroporella*.

[Shetland (*Norman*); Wick (*Peach*).]

## 13. *Lepralia hyalina*, Linnaeus.

On shells and on other Polyzoa, abundant.

14. *Lepralia (Discopora) sincera*, Smitt. (Pl. XI. fig. 2.)

One or two specimens of this well-marked form occur. Smitt reports the species as common in the Arctic Sea as far as Spitzbergen, in 19–60 fathoms.

Lovén has taken it in Finmark. Off Hare Island, Waigat Strait, entrance of Baffin's Bay, 175 fathoms (*Norman*).

15. *Lepralia porifera*, Smitt. (Pl. X. figs. 1 & 2.)

Not uncommon.

[Spitzbergen, not rare, in 20–80 fathoms (Swedish Expedition, teste *Smitt*); Hammerfest (*Lovén*); South Devon (*T. H.*.)]

Several forms occur which seem to be related to this species or to the true *L. (Eschara) Landsborovii*. I can most fully adopt Smitt's naïve declaration respecting the last-named:—"This species, in all its varieties of calcification, has given me much trouble." It is, indeed, a matter of extreme difficulty to interpret satisfactorily the group of forms which bear a more or less near relationship to the *L. Landsborovii* of Johnston. In the first place I believe we may accept Smitt's *L. porifera* as a good species, taking as the type his pl. xxiv. fig. 30 ('Kritisk Förteckn.').

The "forma *minuscula*" and "forma *majuscula*" ranked under it, he has himself, as a result of further examination, transferred to his *Escharella Landsborovii* ('Floridan Bryozoa,' part ii. p. 60).

In *L. porifera* the zooecia are short, ovate, or rhombic, flattish, very thickly punctured over the entire surface, and of a dull white colour; the mouth is suborbicular, slightly contracted below, where two small denticles mark the position of the hinge of the opercular valve and form a shallow sinus on the lower margin; the peristome is very slightly elevated, and there is no central denticle: the *avicularium* projects immediately below the inferior margin; it is larger than in *L. Landsborovii*, and of a more elongate form; the ooecium is rounded, closely adnate, not hooded, somewhat depressed in front, and perforated; spatulate avicularia none.

In the typical *L. Landsborovii* the zooecia are oblong, much lengthened out, somewhat flat, vitreous and glistening when fresh, covered over the whole surface with rather large pores or merely punctured round the margin; the mouth suborbicular, with a prominent tooth on the lower lip in addition to the two lateral denticles; peristome thin, very much raised, with a deep narrow cleft in front, within which the *avicularium* is placed; *avicularium* small, round; ooecium rounded, large,

prominent, glassy, hooded, thickly punctured, frequently with a large spatulate avicularium on one or both sides of it, placed transversely. I have not met with this form amongst the Reikiavik dredgings.

16. *Lepralia propinqua*, Smitt. (Pl. X. figs. 5-7.)

*Eschara propinqua*, Smitt, *l. c.* pp. 22 & 146, pl. xxvi. figs. 126-128.

*Zooecia* short, convex, rising towards the very prominent avicularium; surface warty, sometimes indistinctly areolated round the margin, which is bordered by a raised line; mouth ample, arched above, with a broad, very shallow sinus below; peristome slightly thickened, not elevated, except in the fertile cells; no central tooth; avicularia round, standing out boldly below the inferior margin, so as to have the appearance of a prominent beak. *Ooecium* large, rounded, adnate or subimmersed, sometimes adorned with radiating lines, punctured, the pores often forming a semicircular series round the outer edge of the ovicell, and a small circular group in the centre; in the fertile cells the peristome is much elevated at the sides, sometimes rising into large flap-like expansions, but falls away towards the front, where there is a wide opening in which the avicularium is placed. There are frequently spatulate avicularia on each side of the ooecium; but they differ in shape from those of *L. Landsborovii* (normal) and are inferior in size (Pl. X. figs. 7 & 8).

This form seems entitled to specific rank. It exhibits a different type of cell from that of *L. Landsborovii* (*short, ovate or rhombic, and very convex*); and it also diverges from that species in the character of the ooecium and of the peristome, as well as of the large avicularia. It agrees with *L. porifera* in the absence of the marginal denticle, but wants its porous surface.

It must be left for further investigation to show whether these forms are so closely connected with each other and with *L. Landsborovii*, by intermediate varieties, as to constitute truly but one specific group. With our present knowledge they are properly accounted distinct.

Smitt refers *L. propinqua* to his *L. (Eschara) verrucosa* group; but its closest affinity is clearly with *E. Landsborovii*.

[Spitzbergen, 60 fathoms (*Malmgren*); Greenland (*Torell*); Finmark (*Lovén*).]

17. *Lepralia reticulato-punctata*, n. sp. (Pl. X. figs. 3 & 4.)

*Escharella porifera*, forma *edentata*, Smitt, Förteckn. part iv. p. 9, pl. xxiv. fig. 39.

[Spitzbergen (Swedish Expedition).]

*Zooecia* ovate, moderately convex, strongly reticulato-punctate; orifice suborbicular, somewhat compressed, with a broad well-marked sinus on the inferior margin; peristome not raised; no central tooth; avicularium large, elongate-oval, sometimes half immersed, sometimes prominent, placed in the centre immediately below the mouth, occasionally at a short distance beneath it or turned transversely. *Ooecium* rounded, closely adnate above, thickly punctured; peristome in the fertile cells not raised.

This is another form belonging to the same group as the two preceding. It is figured by Smitt, and described by him as *Escharella porifera*, forma *edentata*. It is distinguished from that species by its reticulate and coarsely punctured surface, by the form of the mouth, which is much less arched above (compressed) and with a more marked sinus below, and by the large elongate-oval avicularium, which is somewhat variable in position, whereas that of *L. porifera* is constantly attached to the inferior margin. The two also differ much in general aspect.

The preceding three forms occur amongst Reikiavik dredgings only in an incrusting state; and there is nothing to show whether they ever assume the Escharine mode of growth.

18. *Lepralia radiatula*, n. sp. (Pl. X. figs. 9-14.)

? *Cellepora plicata*, var., Smitt, Förteckn. iv. pl. xxviii. fig. 193.

*Zooecia* ovate, disposed in linear series, whitish, minutely roughened, traversed by rib-like lines, which run from the margin towards the centre; mouth suborbicular, surrounded by a thin, much-raised, frill-like peristome, which is cleft in front into a deep loop-like sinus; within it on one side a small avicularium, the mandible directed upwards; a minute pointed denticle immediately within the lower margin. *Ooecium* semicircular, punctured, set far back. The peristome frequently rises at the sides into prominent expansions, which are curiously cut and crenated at the top, and present a very fantastic appearance.

On shell, zoophytes, &c., common.

I have met with no description of this remarkable form; but it seems to be represented in Smitt's figure 193 (Förteckn. part iv.). He refers it to his *Cellepora plicata*, with which, I confess, I cannot see that it has any close affinity whatever. It varies much in different states of growth, and especially in the degree in which the peristome is developed: at times it forms a plain border round the mouth (Pl. X. fig. 10); at



others it takes on such shapes as are represented in Plate X. figs. 11-14.

[Arctic Sea (*Smitt*).]

Genus CELLEPORA, Fabricius.

(*Celleporaria*, *Smitt*.)

19. *Cellepora incrassata*, Lamk.

This fine species, judging from the fragments which abounded in the dredging, must be common off the coast of Iceland, as it is, according to *Smitt*, in the seas about Spitzbergen and Greenland. In Finmark it seems to be less abundant East Greenland, plentiful (German Polar Exped.).

20. *Cellepora ovata*, *Smitt*. (Pl. XI. fig. 5.)

Two fragments occur.

[Spitzbergen, in 10-60 fathoms; less common than *C. scabra* and *C. plicata* (*Smitt*); Sabine Island (German Polar Expedition).]

In this species the mouth is orbicular, instead of triangular as in the allied *C. plicata*, *Smitt*, and the avicularium much shorter than in that species. The mucro is set completely at one side of the mouth. The surface of the cells, which are very convex and regularly ovate, is coarsely punctured, the spaces between the punctures rising at times into ridges. The peristome is thin and not at all elevated.

*Smitt*, as *Kirchenpauer* has already noticed, ranks this form with his *Cellepora scabra* in such a way that it is difficult to determine whether he regards the two as specifically distinct or not. From his description of the figures (p. 226) I should infer that he looks upon these two forms and *C. plicata* as merely varieties of one and the same specific type. Judging, however, from those figures, as well as the Icelandic and Labrador specimens, I have little hesitation in considering *C. ovata* an independent species with well-marked features.

*Smitt*, indeed (p. 188), refers to certain intermediate forms by which, he thinks, the distinction between *C. ovata* and *C. plicata* is reduced to a very small matter—forms in which the general appearance of *C. ovata* is combined with an ovicell resembling that of *C. plicata*, though wanting its punctured surface, and a mouth which often suggests the three-cornered shape\* so characteristic of the aperture in the last-named species; but as he does not figure these forms it is difficult

\* I am afraid this is a very free translation of the Swedish, "och dervid ser djurhusmynningarne äfven här få en antydning till trekantform;" but I hope it does not misrepresent its real force.

to estimate their precise significance. The mouth in *C. ovata*, as I have seen it, is orbicular, slightly compressed or flattened below; in *C. plicata* it is decidedly subtriangular, and the lower margin runs to a point. This is an important structural distinction, the specific value of which we are certainly not justified in rejecting without much fuller evidence respecting transitional forms than we now possess. It is of course eminently undesirable that species should be multiplied on trifling pretexts; it is equally undesirable that well-differentiated and tolerably stable forms should be confounded.

21. *Cellepora plicata*, Smitt. (Pl. XI. figs. 3 & 4.)

Iceland, 100 fathoms.

[Spitzbergen, 2–60 fathoms, very common (*Smitt*); Greenland (German Polar Expedition); Godhavn Harbour, Disco, 5–20 fathoms (*Norman*, 'Valorous' dredgings).]

In this species the cells are ovate, somewhat depressed; surface smooth and glistening, sometimes traversed by ribs radiating from the circumference; mouth subtriangular, slightly arched above, the sides running to a point in front, so as to form an acute angle; peristome thin and slightly raised at the sides; on one side a prominent mucro, bearing a large elongate-oval avicularium, with rounded mandible, looking obliquely sideways. *Ooeci*um semicircular, smooth, punctured in front. Allied to the preceding, but, I think, distinct. A very salient character is the great length of the oval avicularian opening.

Genus ESCHARA, Ray.

22. *Eschara pavonella*, Alder.

A single specimen was met with.

[Spitzbergen, in 20–60 fathoms, not rare (*Torell* and Swedish Expedition); Finmark, in 20 fathoms (*Goës* and *Malmgren*). Not yet found in Southern Scandinavia (*Smitt*). England, north-eastern coast.]

Genus MYRIOZOUM, Donati.

(*Leieschara*, Sars.)

23. *Myriozoum coarctatum*, Sars.

Iceland, 100 fathoms.

[Spitzbergen, in 19–80 fathoms (Swedish Expedition); Norway (*Ström*, *Sars*, &c.).]

24. *Myriozoum subgracile*, D'Orbigny.

Iceland, 100 fathoms.

[Spitzbergen, 19–80 fathoms, common (Swedish Expedi-

tion); Greenland (*Möller* and *Torell*); Holsteinborg Harbour, 7–35 fathoms; entrance of Baffin's Bay, 175 fathoms ('Valorous' dredgings); Anticosti and Mingan Islands; South Labrador (*Packard*).]

In this very distinct species, the small oval avicularia are sometimes placed on each side of the mouth at the top, or sometimes on one side only: occasionally they occur about the middle of the aperture; they are also distributed irregularly over the zoarium. In many cases they are wanting altogether in connexion with the mouth of the cell.

### Genus RETEPORA, Imperato.

#### 25. *Retepora Wallichiana*, n. sp., Busk (MS.). (Pl. XI. figs. 9–13.)

*Retepora cellulosa* (Linn.), forma *notopachys* (Busk), var. *elongata*, Smitt, l. c. pt. iv. pp. 36 & 204, pl. xxviii. figs. 226–232.

*Zoarium* irregular, sometimes giving off long free branches; *fenestræ* elongate, narrow, lozenge-shaped. *Zooecia* immersed, elongate, somewhat rectangular, bordered by lines, the mouth suborbicular; peristome thin, raised, the inferior margin projecting and with a very minute central sinus; immediately below it in many of the cells a prominent rostrum placed obliquely, bearing on its summit a large avicularium with strongly incurved beak and a long triangular mandible pointing downwards. *Ooecium* small, rounded, smooth; placed very far back behind the mouth and separated from it, in the centre of the arch of the opening, a small denticle (Plate XI. fig. 12).

This form has been very accurately described by Smitt; but he regards it as a variety of the Crag species *R. notopachys*, Busk. Some years since Mr. Busk, who had met with it amongst Dr. Wallich's dredgings, gave it the MS. name which I have retained in this paper, and which fittingly commemorates one of the earliest and ablest pioneers in the work of deep-sea exploration. I agree with Mr. Busk that it is specifically distinct, though in some respects it seems to approach the fossil form. The chief points of difference between it and *R. notopachys* are to be found in the mouth, which in the latter, according to Busk's figure, is furnished with a rather deeply incised sinus on the lower margin, whereas in *R. Wallichiana* the sinus is very minute and shallow\*—and in the ovicell, which in the last-named is small, with a very moderate orifice and a conspicuous denticle in the centre of the oral arch, while that of the Crag form is described as large and open in front.

The *position* of the ovicell in the present species is also

\* The contour of the oral aperture is very different in the two species.

peculiar; it is developed at some distance above the mouth, and is apparently quite separated from it at first, though at a later stage united to it by an extension of the peristome, as Smitt has remarked. Judging from Busk's figure, I should also suppose that the avicularia differed in character in the two, though this portion of the structure is badly preserved in the fossil.

In *R. Wallichiana* there is none of the remarkable thickening of the branches behind, nor is there any trace of the "crescentic laminae" which are ascribed to the other species. Its dorsal surface is flattened, traversed by raised lines, which for the most part run longitudinally, while that of *R. notopachys* is marked by deep, usually transverse sutures. The fenestræ also seem to be much smaller in the latter form.

In the present species the zoocæcia are sometimes very indistinct, at others they are well defined by conspicuous raised lines. On the dorsal surface, at the base of each fenestra there is an immersed avicularium, placed transversely.

Iceland, 100 fathoms, apparently common.

[Spitzbergen, 20-80 fathoms, common; Finmark (*Smitt*); Godhaab, 150 fathoms (*Busk*).]

#### Suborder Cyclostomata.

##### Genus CRISIA, Lamx.

###### 26. *Crisia denticulata*, Lamk.

Iceland, 100 fathoms; several small fragments occur.

[Norway (*Sars*); Spitzbergen; Bahusia (teste *Smitt*); Great Britain &c., Scotch Glacial deposits (*Geikie*).]

##### Genus IDMONEA, Lamx.

###### 27. *Idmonea atlantica*, E. Forbes.

Iceland, 100 fathoms; abundant.

[Scandinavia, from Bahusia to Finmark, common (*Sars*, *Lovén*, *Smitt*); Shetland (*Barlee*); entrance of Baffin's Bay, 175 fathoms (*Norman*).]

##### Genus TUBULIPORA, Lamk.

###### 28. *Tubulipora ventricosa*, Busk.

Iceland; on *Sertularella tricuspidata*, Alder.

[West Greenland, on *Fucus* (*Sutherland*).]

29. *Tubulipora flabellaris*, Johnst.

In the form which I refer to this species, the zoarium is flat, depressed, opaque, minutely specked, and somewhat rugose transversely; the tubes are placed horizontally, somewhat radiately disposed, of comparatively large bore, free only for a short distance at the extremity, the free portion not turning upwards, but taking the horizontal direction. It is more or less regularly flabellate in its mode of growth. It is well represented by Johnston's figure and in Busk's 'Cyclostomata,' plate xxiv. fig. 2. It is distinct, in my judgment, from the true *T. phalangea*.

## Genus DIASTOPORA, Johnston.

30. *Diastopora*, sp. ?

A small patch of a *Diastopora* occurs on a specimen of *Celleporella incrassata*, but in so imperfect a condition that I cannot determine the species with certainty. I believe it to be referable to *D. obelia*, Johnston, which is not uncommon in the Arctic seas.

## Genus DISCOPORELLA, Gray.

31. *Discoporella verrucaria*, Fabricius.

Iceland; abundant on *Sertularella*, &c.

[Bahusia (*Lovén*); Spitzbergen (Swed. Exped., teste *Smitt*); Greenland, Assistance Bay (*Sutherland*); Anticosti and Mingan Islands; Bay of Fundy (*Packard*); Orkney and Arran (*Busk*).]

Mr. Busk has rightly challenged *Smitt's* identification of this form with the *Discoporella flosculus* (*mihi*). The latter is the *Melobesia radiata* of Audouin, with whose figure I was unacquainted at the time (1862) of the publication of this species.

## Suborder Ctenostomata.

## Genus BUSKIA, Alder.

32. *Buskia nitens*, Alder.

Iceland; very fine, creeping over Hydroids.

[Great Britain.]

This seems to be the only Icelandic form not hitherto recorded from the Arctic seas.

Of the 32 species contained in this list, 18 are British; of the latter, *Hippothoa expansa* and *Idmonea atlantica* have only

occurred in the Shetland waters; *Caberea Ellisii* is common to Shetland and the Hebrides, and *Lepralia tubulosa* to Shetland and the north-eastern part of Scotland (Wick). The following may be regarded as forming a distinctively Arctic group:—*Menipea arctica*, *M. Sophieæ*, *Lepralia sincera*, *Cellepora incrassata*, and perhaps *Myriozoum coarctatum*. Twelve of the Icelandic species have been found on the North-American coast.

It should be mentioned that the dredging which supplied the material for the above list was contained in a single bottle of very moderate size.

#### LABRADOR SPECIES.

The forms recorded in this list were taken in Hamilton's Inlet, at a depth of 15 fathoms, by Dr. Wallich.

#### INFUNDIBULATA.

##### Cheilostomata.

1. *Menipea ternata*, Ellis & Sol.
2. *Cellularia Peachii*, Busk.
3. *Gemellaria loricata*, Linn.
4. *Lepralia annulata*, Fabricius.
5. *Lepralia propinqua*, Smitt.
6. *Lepralia hyalina*, Linn. The prevalent form.
7. *Lepralia pertusa*, Esper.
8. *Lepralia radiatula*, Hincks.
9. *Membranipora lineata*, Linn.
10. *Membranipora cymbæformis*, Hincks.
11. *Cellepora scabra*, Smitt.

This belongs to the same group as *C. plicata* and *C. ovata* of Smitt, the three being ranked as varieties of one and the same species by this writer.

In the present form the zoecia are very short, convex, crowded, and suberect; the mouth orbicular, slightly compressed in front; immediately below the inferior margin rises a some-

what massive mucro, as broad as the mouth and stretching back for some distance over the wall of the cell; it bears on one side an avicularium with rounded mandible, directed upwards. The surface of the cell is smooth, but often traversed by ribs which radiate from the margin and are carried up as prominent keel-like lines to the apex of the rostrum. The ovicell is semi-circular, and, in an early stage at least, without punctures. Within the inferior margin there is a small denticle.

The cells have a very crowded appearance, and are more erect than those of either *C. plicata* or *C. ovata*. The mucro is central (that is, the apex corresponds with the centre of the inferior margin, and the base spreads out equally on each side), while in the two last-named species it is placed completely on one side of the cell.

## 12. *Cellepora bilaminata*, n. sp. (Pl. XI. figs. 6, 7.)

Amongst the Labrador dredgings there is another form referable to the same group as the above, but presenting some marked and distinctive peculiarities. It occurs in two very different conditions. In one (*a*) the cells are rather crowded, ovate, suberect, the surface smooth; mouth orbicular, the peristome rising on each side into a mucronate process, one of the two (and occasionally both) bearing on its side an avicularium with rounded mandible; between the two processes there is a rather wide cleft, and immediately within it a small denticle (Pl. XI. fig. 6). Occasionally there are traces of the formation of a second calcareous lamina over the primitive cell-wall. Cells occur in which the second envelope has only partially overspread the original wall, and the edge of the later growth can be distinctly traced.

In the other condition in which the species appears (*b*) almost every cell exhibits the double lamina, the later process of calcification being only partially effected (Pl. XI. fig. 7). In this state there are no avicularia. The processes on the inferior margin are both simple extensions of the primitive lamina, somewhat rounded at the top and separated by a broad cleft. With the growth of the second lamina they would assume their perfect mucronate condition; and the development of the avicularium (or avicularia) would probably follow. The ovicells are developed plentifully on this form; they are semicircular, almost truncate in front, partially concealed by the ascending marginal processes, smooth, with a few rather large punctures on the front. I have not noticed this doubling of the cell-wall in any of the kindred species, while the character of the mouth is very distinctive. I have therefore thought it best to give this form a separate name.

13. *Cellepora ovata*, Smitt.

The specimens of this form from Labrador and Iceland are identical in character.

## Cyclostomata.

14. *Crisia eburnea*, Linn.

[Mediterranean; Madeira; Australia.]

15. *Tubulipora flabellaris*, Johnst.16. *Discoporella verrucaria*, Fabr.

Of the foregoing species eight, or half the number, are not included in Packard's list of the *Polyzoa* of South Labrador. Fourteen are common to the American coast and the Arctic seas. Ten are British. Two are Mediterranean forms, both of them having a very wide range.

## EXPLANATION OF THE PLATES.

## PLATE X.

- Fig. 1. *Lepralia porifera*, Smitt.  
 Fig. 2. The same, showing the ovicell.  
 Fig. 3. *Lepralia reticulato-punctata*, Hincks.  
 Fig. 4. The same, more highly magnified.  
 Fig. 5. *Lepralia propinqua*, Smitt.  
 Fig. 6. The same, more highly magnified.  
 Fig. 7. Large avicularium of *Lepralia propinqua*.  
 Fig. 8. Ditto of *Eschara Landsborovii*, Johnston.  
 Figs. 9-14. *Lepralia radiatula*, Hincks.

## PLATE XI.

- Fig. 1. *Lepralia trispinosa*, Johnston, var.  
 Fig. 2. *Lepralia (Discopora) sincera*, Smitt.  
 Fig. 3. *Cellepora plicata*, Smitt.  
 Fig. 4. The same.  
 Fig. 5. *Cellepora ovata*, Smitt.  
 Fig. 6. *Cellepora bilaminata*, a, Hincks.  
 Fig. 7. The same, b.  
 Fig. 8. *Lepralia tubulosa*, Norman.  
 Fig. 9. *Retepora Wallichiana*, Busk, MS.  
 Fig. 10. The same; a portion of the dorsal surface.  
 Fig. 11. The same, a fragment of about the natural size, showing the shape of the fenestræ.  
 Fig. 12. The same, a single cell and ovicell.  
 Fig. 13. The same, avicularium in profile, showing the strongly developed beak.